Claims

1. An operator cable-housing member assembly comprising:

a generally cylindrical opening defined in said housing extending into a space defined in said housing member;

a sleeve having one end extending into said generally cylindrical opening, said sleeve having said cable secured to a protruding other end of said sleeve;

said sleeve having an elastomeric isolator substantially enclosing said one end of said sleeve, said isolator received in said generally cylindrical opening and compressed against one or more surfaces defined therein;

said operating cable including a core wire movable in an outer case, said outer case secured within said protruding end of said sleeve, said core wire extending completely through an opening in said sleeve and said isolator to pass into said housing interior space.

2. The assembly according to claim 1 wherein said generally cylindrical opening is formed in a generally cylindrical protrusion formed on said housing member, and said isolator is held in said opening by a cap held on an end of said protrusion.

3. The assembly according to claim 2 wherein said cap has one or more features snap fit over a feature on said protrusion.

4. The assembly according to claim 2 wherein said cap has an opening within

which said sleeve protrudes in extending into said generally cylindrical opening.

5. The assembly according to claim 4 wherein said isolator has a reduced diameter end which protrudes out through said cap opening.

6. The assembly according to claim 1 further including a tubular plastic insert in said sleeve said end inserted within said generally cylindrical opening, said cable core wire passing through said tubular plastic insert.

7. The assembly according to claim 6 wherein said tubular plastic insert has a flange extending radially out and abutting said end of said sleeve.

8. The assembly according to claim 1 wherein said sleeve has a flange formed therein extending out into surrounding portions of said isolator.

9. The assembly according to claim 1 wherein said housing member has a partially spherical seat formed therein aligned with said generally cylindrical opening and located inwardly therefrom, and having a central opening receiving said cable wire core passed through said sleeve, said seat facing back towards said sleeve.

10. The assembly according to claim 9 further including a swivel tube having a ball head resting in said seat and a tubular body extending through said central opening into

said interior space of said base housing, said cable wire core extending through an opening in said head and within said tubular body.

11. The assembly according to claim 10 wherein said isolator has an inner end formed with a partially spherical seat facing said partially spherical seat formed in said housing member, said swivel tube ball head captured therebetween so as to accommodate tilting of said swivel tube.

12. The assembly according to claim 11 further including a rod slidable in said swivel tube body and having one end affixed to said cable wire core.

13. The assembly according to claim 11 wherein said housing member has an integrally formed tubular projection aligned with said generally cylindrical opening and extending into said interior space within said housing member and formed with a partially spherical seat of said base housing, and said swivel tube extending within said tubular projection.

14. The assembly according to claim 13 wherein said tubular projection has outwardly flaring inner wall allowing tilt of said swivel tube, and said swivel tube has a reduced diameter land adjacent to said ball head.

15. The assembly according to claim 1 wherein said sleeve is constructed of steel, said sleeve crimped to said operator cable case.

16. A method of assembling an operator cable having an outer conduit and an inner core wire movable therein to a housing comprising:

forming a generally cylindrical opening in said housing;

substantially enclosing one end of a sleeve with an elastomeric isolator;

partially extending said sleeve and isolator into said generally cylindrical opening;

compressing and holding said isolator against one or more surfaces in said cylindrical opening to be sealed thereto;

passing said operator cable into a protruding opposite end of said sleeve and fixing said case within said protruding end of said sleeve; and

extending said cable wire core through said sleeve and isolator and into an interior space of said housing.

17. The method according to claim 16 wherein said isolator is compressed against said one or more shoulders in said generally cylindrical opening by installing a cap of against protruding end of said isolator and locking said cap to a protrusion formed on said housing.

18. The method according to claim 16 further including forming a partially spherical seat aligned with said generally cylindrical opening on an inner portion of said housing, said seat having a concentric opening, passing a body of a swivel tube through said concentric opening to bring a partially spherical head portion on an end of said swivel tube into abutment with said seat, forming a partially spherical seat on an end of said isolator facing said seat formed

on said housing inner portion and forced against said head of said swivel tube, and extending said cable core wire through an opening in said isolator seat and swivel tube head, and into said swivel tube.

19. The method according to claim 16 further including installing a tubular plastic insert into a portion of the length of an inner passage in said sleeve and passing said cable wire core through an opening extending along said tubular plastic insert.

20. The method according to claim 17 wherein said cap is locked to said protrusion by snap fitting a feature formed on said cap to a feature formed on said protrusion.

21. The method according to claim 19 further including forming a flange on said insert and also on a portion of said sleeve enclosed in said isolator acting to compress said isolator when said cable is operated.

22. The method according to claim 18 further including attaching said cable core wire to said one end of a rod, and inserting one end of said rod into said swivel tube slidably fit therein.